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ABSTRACT

A study explored the social uses of computer-mediated communication, identifying primary users and amounts of time spent using two related systems. Interviews and observations of computer users suggest that a large, socially active computing subculture is based at the University of Massachusetts, Amherst campus. It was hypothesized that members of the subculture are the heaviest users of available electronic mail and electronic conference systems. A questionnaire was administered directly through a special computer program on the University of Massachusetts mainframe. Light users of the electronic mail system reported they used the system to communicate with friends, but they equally reported using the system to get help with homework. Heavy users more frequently used it for social purposes--mainly to initiate friendships and to arrange personal meetings. Light users reported using the conference facility mainly to alleviate boredom. Heavy users of the conference facility reported using the system to initiate friendships. Heavy users also reported spending less time on the phone or in face-to-face communication than light users. The idea that the computer mediates and facilitates an individual's social life leads to interesting questions which further research should attempt to explore. (SRT)

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ELECTRONIC MESSAGING AND CONFERENCING WITH AN EMPHASIS ON SOCIAL USE: AN EXPLORATORY STUDY

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Computer Mediated Communication*

Until fairly recently, computer-mediated communication was used primarily for business and corporate applications. Co-workers could communicate with each other through electronic mail and conferencing, whether it be intra-office or over long distances, connecting offices in many different cities. The benefits and disadvantages of computer-mediated communication in office settings have been well documented (Rice and Blair, 1984; Johansen,1984). With more and more people purchasing home computers, computer mediated communication is becoming accepted and used by people for purposes aside from business and corporate applications. The technology gives the person with a modem and terminal the ability to communicate with people in other geographic locations in a matter of seconds. Bulletin boards and commercial services such as COMPUSERVE and THE SOURCE give users communication options never before available through conventional communication devices.

Most Universities and colleges now have mainframe computers which support electronic mail services. The University of Massachusetts' Control Data Cyber mainframes supports several electronic mail systems. Various Digital Equipment Corporation Vax systems housed in many departments across the University of

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Massachusetts campuses as well as other campuses in the five college area (Smith, Mt. Holyoke, Amherst, and Hampshire colleges) also support internal electronic mail systems. The University of Massachusetts is also a BITNET site, which in turn is connected to "gateways" that allow access to other network mail system such as ARPANET, CSNET, MAILNET and UUCP. The most widely used mail system in the five college area however, is supported by the University of Massachusetts Cyber system. There are approximately 3,000 people registered on this mail system. Any student or faculty member can obtain an account that allows access to the Cyber computer and thus the mail systems. Many of the University and five college professional and support staff also have access to the University mainframe electronic mail system.

The University Cyber also supports a conference facility called Confer. Confer can be accessed twenty-four hours a day by anyone with a computer account.* Depending on the time of day there are anywhere from three to forty people actively involved in a conference. Late evening hours seem to be the most popular time to participate. Attributes of the conference system include the ability to send both group and private messages and being

* When this study was conducted, the conference facility could be accessed 24 hours a day. Recently, however, the hours were cut back. The conference facility is now only available from 5 PM to 8 AM. This action by the University Computing Center caused quite a disturbance among regular users of the conference system.

able to create your own conference over which you maintain control.

Confer is not used for any official purpose although it was originally intended to be used for consulting; rather it now serves a function of social utility for a particular group of people which might be identified as a computing subculture. While people will drop in and out of Confer, attempting to locate a fellow confer user or stopping in for a moment to just to say hello, it is not surprising to see certain individuals on the system for up to five hours at a time. A good analogy to confer would be to a group of friends who congregate at someone's home and sit around and chat the evening away, every evening. Frequently people will get together in the same geographic location and "confer". They may be sharing one account or sit in a room of publicly available terminals and all confer at their own machine using their own accounts. Unwritten rules of behavior on confer do exist, and are adhered to by most users. When rules are broken, the user is quickly reprimanded or dropped from the conference.

Taken in combination, the various electronic communication systems in the five-college area allow for interesting uses of computing systems, aside from writing programs or doing statistical analyses. There are many reasons why the University setting provides fertile ground for the study of the use of electronic mail, especially when considering the increasing acceptance of electronic communication in the mainstream of our society. Individuals who pass through the University will

eventually go on to hold jobs in our society. Exposure to electronic mail as a college student will undoubtedly influence the way they use electronic communication in their day-to-day work and social lives.

Discussion surrounding the use of electronic mail in the business and corporate world has to a certain point focused on the adoption of the technology. Research has found that many people are resistant to computer mediated communication for a variety of reasons, and either will not use the medium or feel pressured and forced to use the computer to communicate (Rice, 1984). At this University however there are a large number of people who choose to use the computer as a medium via which to communicate. The use of electronic communication in a University setting provides an different environment in which to study the use of electronic mail because so many people have chosen voluntarily to use the computer as a communication device, as opposed to those in a business setting who generally are required, for whatever reason, to use the system.

The development of computing subcultures on University campuses (Turkle, 1984) and via commercial electronic mail services (Ms., 1985) adds to further intrigue regarding the social use of computer-mediated communication. As will be discussed below, while belonging to the computing subculture may be of benefit to the individual, there are also problems associated with spending an extended amount of time socializing on the computer. The purpose of this study was to explore the social use of the computer-mediated communication: identifying the primary users, amount of time spent using the systems and

exploring the various social uses of computer-mediated communication.

Communicating With a Computer

Social scientists have speculated that new technologies will impact on our communication behaviors in ways here-to-fore unimagined. Williams, Frederick and Rice (1983) believe that new technologies may be creating new communication needs. Bell (1981) hypothesizes that changes in communication due to new technologies will totally transform the economic and political structure of our society. Generally academic research concerning computer-mediated communication has focused on corporate or business communication. Laboratory experiments have been conducted in an attempt to explore communication efficacy and computer mediated communication (Kiesler, Siegel and McGuire, 1984; Chillcoat and Dewine, 1984). Researchers at the New Jersey Institute of Technology have been involved in intensive research efforts aimed at looking at the use of electronic mail. Hiltz (1984) made an extensive case study of a group of scientists who used electronic communication for professional purposes, and Kerr and Hiltz (1982) evaluated and compared electronic mail services based upon many different criteria including cognitive, affective, societal and group impacts.

Until recently, the social use of electronic communication in an office setting, on commercial networks, bulletin boards, or within the academic community has, with few exceptions, been ignored in research efforts exploring the use of electronic mail.

There is evidence to suggest, beyond the observations discussed above, that people are finding the computer to be a tool for communicating beyond task performance. Hiltz (1984) found that users of the Electronic Information Exchange System (New Jersey Institute of Technology) commonly used the mail system for social purposes:

> Once users have gotten comfortable with the system, they tend to use it for socializing as well as for task-oriented activities. They exchange gossip and pleasantries, support and comfort one another at times of personal crisis, look for interesting activities online, flirt, and invent new forms and applications
> (Hiltz, 1984, p. 106-107)

In an earlier report of the use of this same mail conference system, Kerr and Hiltz report users forming friendships and even having "online cocktail parties" (p. 111) mediated by the computer.

Steinfield (nd) explored the task and "socio-emotional" use of electronic mail in an office setting. He found a number of variables which could be used to predict the social use of the computer, among them being the actual "social presence" of the computer and the amount of time a person had been employed by the organization.

Recently discussions of the use of computer bulletin boards have been appearing in popular journals discussing such diverse areas as on-line dating services (Rensin, 1985) and bulletin boards run for the purposes of bringing together people with common interests (Meeks, 1985).

The Computing Subculture

The University of Massachusetts has a fairly large computer

subculture, as do most Universities that maintain major computer science and computer engineering departments. I call this a subculture as it is in no way part of the mainstream college life at the University. In fact it is fairly invisible to those who do not regularly use the computer. It is important to stress also that this is not a deviant subculture, rather one that serves the primary interests of members, fulfilling various needs that are otherwise unfulfilled by mainstream University life. Sproull, Kiesler and Zubrow (1984) discuss computing as being part of an alien culture: "Every culture has values and norms, a status hierarchy, membership signs and boundaries to distinguish members from non-members, a language and its own artifacts (Gamst and Norbeck, 1976)." Sproull, et al. discuss some identifiable behaviors of members of the subculture:

> -They share (or sometimes argue passionately about) certain values about good and bad machines, software, programming practices, and systems.
> -They can be found, voluntarily, at the computer all hours of the day and night.
> -They use an esoteric vocabulary for both technical and non-technical purposes.
> -They are differentiated from non-members by special names and behaviors.
>
> (Sproull, et al., 1984, p.5)

Members of the computing subculture at the University of Massachusetts carry on the same behaviors described above; for example, members will greet each other verbally or through the written word with an HLOE [sic], and call each other in person by their nickname used on the computer as opposed to their given name.

As part of her ongoing research, Sherry Turkle (1984) performed an ethnographic study of the computer subculture at the

Massachusetts Institute of Technology. She describes this as being,

> a culture of people who leave each other a great deal of psychological space. It is a culture of people who have grown up thinking of themselves as different, apart, and who have a commitment to what one hacker described as 'an ethic of total toleration for anything that in the real world would be considered strange.' Dress, personal appearance, personal hygiene, when you sleep and when you wake, what you eat, where you live, whom you frequent - there are no rules but there is company.
>
> (Turkle, 1984, p. 213)

It is not the purpose of this research project to investigate the particulars of the computer subculture at the University of Massachusetts, however the casual observer of the University of Massachusetts subculture would have to agree with Turkle's observations. There are rules specifically dealing with electronic communication that have been defined by the systems programmers, the University Computing Center, and the subculture itself; for example, how crude one can get on the system before being ostracized by the subculture itself, or having their computer account taken away, and rules are written into programs themselves which define the limitations of the system.

There are approximately two hundred and fifty people that are actively and peripherally involved in the computing subculture. Those who are actively involved in this computer subculture depend heavily on computer mediated communication for their social activities. Friendships are initiated on the computer and later carried on off-line. Quite frequently the name one uses on the computer becomes within the subculture akin to ones given name. Romantic relationship as well are initiated

on the conference or mail system. The regular users of both these systems have formed a cohesive group that interacts socially off the computer. The social activities that take place off the computer are generally similar to that of the typical college student, although the bond of the computer and subculture separates these people from mainstream college life.

Belonging to this subculture can be problematic for some. The computer tends to take over some of the members of the sub-cultures lives to the point where they ignore other academic obligations aside from work that can be done on the computer. Many exhibit symptoms of what Bezilla and Kliener have termed computer addiction.

1. Signing on at least several times a day ("Maybe something is waiting").
2. Physical irritation when system is inaccessible.
3. Preference shown towards composing thoughts and writings on line.
4. Preference towards developing concepts on line.
5. Preference towards conducting colleagial relationships on line.
6. Signing on "just one more time" before going to sleep.

(Bezilla and Kliener, 1980)

It is important to understand how and why the computer and computer-mediated communication has become so important for this group of people.

Research Approach

A special computer program was written to administer the questionnaire directly from the computer terminal or micro computer connected to the University of Massachusetts mainframe via modem or direct hardwire link. Along with ease of

administration, human errors made when coding the data could be ruled out because the data were written directly into a file according to a pre-specified format. The questionnaire took approximately ten to twenty-minutes to take, depending on the response pattern.

The questionnaire was made up of several types of questions. A series of questions was designed to measure frequency of use of each electronic mail system and the conference system. Respondents were asked major reasons for using the systems, who they communicated with, and items were included which tapped into how important these systems were to their work and social lives. General items about computer use and demographic questions were also included. A random sample of registered mail users was selected. Potential respondents received a letter of intent, requesting that they participate in the survey. They were given directions on how to access the survey, told that responses were confidential and that results of the survey would be made available to them upon completion of analysis. The survey was accessible for a two week period of time from when the electronic letters were first mailed.

FINDINGS

A total of 236 people completed the questionnaire out of a sample of 650. Seventy-four percent of the sample were male, twenty-six percent female. Ages of the respondents ranged from fourteen to sixty-one, with the majority of respondents (72%) being between the ages of eighteen and twenty-

two. Affiliation with the University varied (non-professional and professional staff,faculty, non-designated affiliation), with most users being students (undergraduate, 77%, graduate, 11%). Over half of the respondents (53%) live in a University of Massachusetts dormitory and use publicly available terminals to communicate with the cyber mainframe (55%). Length of time using a computer varied from one to thirty-four years, with twenty-two percent of the sample having used a computer one year or less, twenty-six percent using a computer for two to three years and twenty-eight percent of the respondents using a computer for four to five years. Eighty-four percent of the respondents reported having taken at least one class in software use or programming.

The sample was divided into heavy (55%) and light users (45%) of both the electronic mail and the electronic conference system with, heavy users being those people who reported using the system several times a week or more. Twenty-three percent of the sample reported using the electronic mail system at least once a day, and twenty-two percent of those respondents who used the conference system reported accessing it at least once a day. As was expected, the heavy users of both systems sent more private messages to other users, and read and posted messages on the public notes files.

Differences between heavy and light users of electronic communication

Based upon observation of the the use of the electronic mail system and the confer utility, it was hypothesized that heavy users of these systems used them for social purposes. This social utility function includes the use of the computer to facilitate communication as well as providing a common source of conversational material and a common group activity. The findings of this study uphold this hypothesis. There were many very strong statistical differences between heavy and light users of the conference and electronic mail systems which indicate that electronic message systems serve a purpose above and beyond normal communication for heavy users.

Heavy users of the electronic mail system reported using the systems far more frequently for social purposes. Heavy users of electronic mail (40%) said that their major reason for use was to communicate with friends. While light users reported using electronic mail to communicate with friends (26%), they equally reported using the system to get help with homework (26%). Heavy users of electronic mail reported using the system far less for getting help on homework (5%). Overwhelmingly heavy users of electronic mail reported using the computer to initiate friendships (heavy=30%, light= 11%), and then meeting people in person (heavy=52%, light= 6%). Heavy users (33%) also reported spending less time on the phone or in face-to-face communication than light users (10%).

The conference facility also serves a purpose of social

utility for the heavy users. Heavy users of the conference facility reported using the system to initiate new friendships (heavy=60%, light=22%) and then continuing these friendships face-to-face (heavy=75%, light=45%). Heavy users of the conference system reported their major reason for using electronic mail was to communicate with friends (58%), yet the light users' major reason for using the conference system was to alleviate boredom (33%). Heavy users report using the system to be with other people (heavy=64%, light=32%) and discussing school (heavy=51%, light=14%) and personal problems (heavy=30%, light=12%) more frequently on the conference facility than the light user. When asked how important the conference facility was to them, heavy users reported that it was far more important to them then the light user, with twenty percent of the heavy users reporting that it was very important to them.

[INSERT TABLE ONE HERE]

CONCLUSION

Casual observation of use of the electronic mail and conferencing systems in the five college area led to the hypothesis that there was a group of people was using the electronic mail system for a social facility function; further, many of the users of the computer-mediated communication belonged to a computing subculture. The results of this study indicate that many people do indeed use the mail and Confer system not only as a form of communication but as a way to meet new people and make new friends. Further, interviews and observations suggest that there is a fairly large, socially active computing

subculture based at the University of Massachusetts Amherst Campus, and that members of the subculture are the heavier users of the electronic communication systems (Hellerstein, 1985).

The idea that the computer mediates and facilitates an individual's social life leads to many interesting questions which further research efforts should attempt to explore. What do the heavier users of the communication systems have in common in respect to levels of self esteem social skills, education, values, and goals and do these attributes differ from that of the mainstream college student?

Reports in popular magazines indicate that there is also a fairly large group of people, with financial resources allowing them to purchase time on commercial networks, that also use computer-mediated communication for social purposes. Research efforts might explore attributes that characterize these users. Computer-mediated communication allows users to interact on fairly intimate levels with friends and total strangers. Is computer-mediated communication providing people that have difficulty inter-acting in face-to-face situations the perfect means for meeting people in a non-threatening environment? In the long run, will people who use the computer to make initial social contact be able to maintain these relationships in face-to-face situations, or be left feeling more frustrated by the inability to form healthy relationships?

The computer is a relatively new medium over which to communicate. Are the rules for communicating over a computer different from those of face-to-face communication or telephone mediated communication? When people communicate over a computer

is something missing, or does the computer actually add something to the communication process? As computer-mediated communication becomes more widely used undoubtedly researchers will come to a clearer understanding of the issues raised in this paper as well as the above questions.

TABLE ONE
USE OF ELECTRONIC COMMUNCIATION

	heavy users mail	light users mail	sig.	heavy users Confer	light users Confer	sig.
Use electronic mail to alleviate boredom	23%	23%	.000	16%	33%	.02
Use electronic mail to communicate with friends	40%	26%	.0001	58%	28%	.02
Use electronic mail to initiate new friendships	30%	11%	.0001	60%	22%	.04
Made a friend on the computer and then met in person	52%	6%	.0001	75%	45%	.006
Talk less on the phone because of mail system	33%	10%	.0004	61%	22%	.002
Use conference system to make new friends	25%	5%	**	71%	28%	.001
Use conference system to be with other people	26%	10%	**	64%	32%	.02
Use conference system to discuss school problems	6%	5%	**	51%	14%	.003
Use conference system to discuss personal problems	6%	5%	**	30%	12%	.003
Confer is important to me	31%	5%	.02	87%	35%	.0001

**=no sig.

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